UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
RESEARCH AND DEVELOPMENT

SUBJECT: Evaluation of Epidemiology Data at St. Louis Park, MN

FROM: Herman Gibb, Epidemiologist
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TO: W. Lamar Miller, Acting Director
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THRU: Robert McGaughy, Acting Director
Carcinogen Assessment Group (RD-689)

This memo is in response to your August 11, 1981 request for evaluation of epidemiology data at St. Louis Park, Minnesota. In regard to your request the following documents were reviewed:

1. Dusich, Kari H. 1979. Epidemiologic Investigation of Third National Cancer Survey Data for St. Louis Park, Edina, Richfield, and the Minneapolis-St. Paul Standard Metropolitan Statistical Area with a Historical Review of St. Louis Park's Water Supply. Report prepared for fulfillment of the requirements for the degree, Master of Public Health, University of Minnesota. Prepared September 1979. 100 pp.

2. Health Risk Assessment Unit, Minnesota Department of Health. 1977. Assessment of Possible Human Health Effects Resulting from the Contamination of the Former Republic Creosote Site. Report prepared October 1977. 71 pp.

Concern has been raised that polycyclic aromatic hydrocarbon (PAH) pollution from the site of a Republic Company plant in St. Louis Park, MN which distilled coal-tar products and treated wood with creosote from 1917 to 1972 may be responsible for an elevation in the incidence of white female gastrointestinal cancer, breast cancer, and cancer, all sites. PAH compounds have been found in several municipal and industrial wells in the city of St. Louis Park. Dusich used cases identified by the Third National Cancer Survey (1969-1971) and population data from the 1970 census to arrive at incidence rates for St. Louis Park, Edina, Richfield, and the Minneapolis-St. Paul SMSA. Edina and Richfield were used for comparison since those municipalities were similar socioeconomically to St. Louis Park. Forty-five different cancer sites were examined. Comparison was by the Mantel-Haenzel summary chi-square over age groups and by the use of the Z statistic comparing age-adjusted data. For white males no difference was found for any of the cancer sites. For white females, however, a statistical ($P < 0.05$) difference was found in

comparison to Edina, Richfield, and Minneapolis-St. Paul for breast and digestive cancer and cancer, all sites. One exception was the comparison of St. Louis Park to Edina for breast cancer. In that case, the P value was $0.10 < P < 0.05$. Cancer incidence among blacks was not studied since blacks make up less than 3% of the population in those areas.

Dusich used the cases and the 1970 population for the different census tracts in St. Louis Park to arrive at a map of incidence rates. The highest rates were found to occur south and southeast of the Republic Co. site. Groundwater is thought to flow from the Republic site to the east and southeast. Wells north of the Republic site, however, were found to contain high levels of phenol and some polycyclics. This, Dusich explained, was because most of St. Louis Park's high service pumping wells are located north of the Republic site, an explanation which was not very detailed. A cancer map like the one Dusich has drawn is not useful in regard to the pollution problem from Republic since population migration into and out of the different census tracts in St. Louis Park has probably been extensive during the time from the beginning of the Republic's operation until 1969-71 when the Third National Cancer Survey was done. Dusich herself indicated that only 35.5% of the persons 5 years old and over in St. Louis Park had lived in the same house from 1965 to 1970.

As the author herself stated, the elevated incidence of cancer in St. Louis Park cannot be attributed to the PAH water contamination. The study is ecological in nature - that is, it cannot be determined which persons were actually exposed and what their cancer experience was. Although some chemical analyses were performed on well water, no analyses were done on tap water in the residences nor were any analyses made of blood, fat, or urine of the residents to determine if they had actually been exposed to PAH's.

Dusich has indicated that rats fed one PAH compound, 3-methylcholanthrene, developed mammary carcinoma. Other than that report however, PAH's have not been associated with breast cancer. Gastrointestinal cancer rates were elevated among females but not among males, which would not be expected if contamination of drinking water with PAH compounds were suspected of causing the increase in the female rates.

Abnormally high amounts of PAH in well water should not be ignored. It would be worthwhile to take some tap water samples and some biological samples of the residents in the areas where contamination of ground water has been thought to occur.

Cancer among white females, particularly breast cancer, in St. Louis Park is abnormally high. As Dusich suggested, a case-control study may shed some light on the cause(s) of these elevated rates.

In conclusion, white females in St. Louis Park appear to be at an excess risk of breast and GI cancer and cancer, all sites. Also it appears that PAH's from the Republic wood-treating site have leached into wells in the area. The evidence available, however, does not indicate that the elevated cancer rates and the creosote contamination are associated.

I hope this information is helpful to you. If we can be of further assistance, please do not hesitate to contact us.